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ORIGINAL LECTURES.

CLINICAL LECTURE

ON LACERATION OF THE CERVIX UTERI.

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Reported by CHARLES W. DULLES, M.D., Surgical Registrar to the Hospital.

GENTLEMEN,—We have to-day before us a not infrequent sequela of childbirth. This woman has suffered long from obscure pains in the pelvis and loins, accompanied by a leucorrhœal discharge and a condition of mental depression which is often found when there is an unhealed laceration of the cervix uteri.

Laceration is an accident of labor, and may be due to premature rupture of the bag of waters which Nature intended should effect the gradual and safe dilatation of the os and cervix, so as to admit of the easy passage of the head of the child. I cannot, myself, but think that many cases of lacerated cervix are due to meddling midwifery. The physician comes, and, after waiting a while, thinks he will save his own time and the mother's by rupturing the membranes, as he knows this is almost always followed by a speedy expulsion of the contents of the womb. Sometimes, too, it is caused by the use of the forceps, or by the attempt to push the upper lip over the child's head, so as to hurry matters a little.

I have found, of all the women that come to me, about one in six have a laceration of the cervix; a proportion which indicates, I think, that too much interference in labor is no improvement on Nature's method.

Now let us see how this injury does mischief. When I draw down the womb, you see that the cervix has been torn across, and each edge is everted, just like the curling over of celery-tops when they are split before putting on the table. As a consequence, the delicate membrane lining the cervical canal is exposed, and, as the conjunctiva, when everted and exposed, becomes inflamed and purulent and often sets up further eye-troubles, so this membrane, rubbing against the vagina and receiving

the impact of the male organ in coition, becomes irritated and inflamed. With this there is an accession of blood to the part, and the process of involution is stopped.

Now, how shall we diagnose such an injury? It is not as generally done as it should be. Ninety-nine out of a hundred physicians—no! to keep within bounds, I will say ninety out of a hundred—would call this an erosion or ulceration of the cervix, and treat it with caustic applications. Perhaps after a long while they would get enough cicatricial contraction to lead them to suppose it cured, only to see it return within six months. But, to prove what we have to deal with, I will seize each side of the os with a tenaculum and draw it downward. The edges now come together, leaving a fissure and hiding the raw surface you saw before. If you can thus make the erosion disappear you may be pretty sure you have a laceration of the cervix to treat.

In the present case we have what is called a stellate laceration,—a number of tears radiating from the cervical canal.

The operation in this case will consist of the removal of a wedge-shaped piece from each side of the fissure. The lower one will be done first, so as to avoid the difficulty which would be caused by the blood trickling down from the upper wound if the lower were left till after it.

And here let me give you another test of lacerated cervix. Sometimes in slight or in old cases you cannot tell for the life of you—that is to say, I at least sometimes cannot—whether it is really a laceration or not. Well, in such cases you will usually find on the cervix little cysts filled with a honey-like fluid; these are enlarged Nabothian glands, and from them you may know that the cervical canal has been everted in consequence of laceration, and your diagnosis is established.

In doing this operation I think the scissors are preferable to the knife, because the parts are vascular and erectile. The ones I prefer are the sickle-shaped scissors. I always try to remove the wedge of tissue in one piece, but am not always successful. In this case I think I cannot manage it, because the tissues are dense and friable. Occasionally a vessel may be cut and give some trouble by its bleeding; though it is less embarrassing than in operations for vesico-vaginal fistula, for you

can pass a wire suture below the vessel, and, by having this drawn upon, control the hemorrhage very well.

Formerly I was in the habit of leaving a good space undenuded for the os to be formed,—“space for repentance,” as the painters say. They say when you paint a picture you must not fill it all up at first, but leave some space for ideas that may occur to you later. So here I used to leave a large space for the os, for fear it would close up. But now I have found that if the os is too small I can easily make it larger; if it is too large it is hard to make it smaller: so I am not afraid to denude a large surface and bring the parts close together. This is done with silver wire sutures, passed with a short, curved needle, secured in a needle-holder. Usually I attach a loop of silk to the needle, and thread the wire through this, because then it passes more smoothly.

What will be the result of this operation? Why, that the woman's condition will be immediately improved. Her womb will diminish very much in size,—that is, I expect it will. It does not always happen, though in the great majority of cases it does. I know I have sometimes promised it and had the patient and myself greatly disappointed.

Now, if you will look at this cervix you will see it is greatly distorted, but when the stitches come to be taken out it will be a very good-looking one. You see that the laceration has now disappeared, and have another illustration of the easy way of diagnosing the lesion. There is no good excuse for failing in it; yet the mistake is often made. Indeed, the ignorance of diseases of women is much to be regretted. Let me tell you what a friend told me lately. He said he was called, in consultation, to see a lady in a town of from three thousand to four thousand inhabitants. He did not take instruments with him, and when he wished to make a vaginal examination he found there actually was not a physician in the town who owned a speculum.

Now I have all the sutures in, and will draw them up and secure them with shot. As I do this, a stream of water is thrown from a syringe, so as to wash away any clots that might adhere and prevent speedy union. Attention to such details often insures the success of an operation. In securing the stitches I know no objection to twisting them, but I think I can regu-

late the tension better by using shot, and that they are less irritating than the twisted ends of wire. I cut the wires off flush with the shot. And here I will give you a little hint about the use of scissors. When you are cutting wire, always cut with the heel and never with the points of the scissors,—unless you are using a borrowed pair.

The after-treatment of these cases is very simple. For forty-eight hours the urine should be drawn, to prevent its trickling over the cut edges. It is true bland urine does not irritate; but often the urine is acrid, and I prefer to be on the safe side. The bowels may as well be bound up for the same length of time, though it is not absolutely necessary.

What are the results of this operation? They are of the most successful. Of fifty-four cases I have done, I have not lost one. In one case, however, I had serious localized peritonitis, with phlegmasia dolens and abscess, which I attributed to the fact that the patient lay in the ward alongside of a surgical patient in whom erysipelas broke out. Fortunately, she got well.

I have failed of getting good union in only two cases,—once I do not know why, and once because a polypoid tumor forced its way out of the womb and tore open the wound.

My hour is now expired, and I must only say this, as a parting shot, that you ought now never to mistake a laceration of the cervix, nor be ignorant of the proper way of treating it.

ORIGINAL COMMUNICATIONS.

THE PHYSIOLOGICAL ACTION OF APOMORPHIÆ HYDROCHLORAS.

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Abstract from Inaugural Thesis, March, 1879.

(Continued from page 112.)

THE CIRCULATORY SYSTEM.

THE Pulse.—The influence exerted upon the pulse-rate by apomorphine, in both small and large therapeutic doses, when given subcutaneously, is to cause a primary increase, frequently amounting to half of the normal rate; this increase is followed by a diminution to the normal, or even, in some cases, below the normal. The increase of pulse-rate generally

reaches its maximum either during or immediately after the stage of emesis. Seibert (*Archiv der Heilkunde*, 1871, pp. 522-548) found a rise in the pulse-rate, after vomiting, equal to one-third of the normal rate; between the acts of vomiting there was always a diminution, and when vomiting was not present the frequency of the pulse was entirely wanting. He therefore concludes that the increased pulse-rate was due to the emesis. After a careful research in this matter, I am compelled to disagree with the above observer's conclusion, for it is very obvious, from the results of eleven experiments made on normal animals, that the increased pulse-rate cannot be due to the vomiting. It can have no dependence whatever on this act, for the reason that the increase occurs not only when the vomiting is present, but also when even the symptoms of nausea and vomiting are entirely absent. It will also be observed that this increased pulse-rate occurs in rabbits, which cannot vomit. This fact alone would invalidate Seibert's conclusion. In my experiments on frogs I never observed any increase in pulse-rate.

In six experiments made on mammals with small subcutaneous injections I found an average increase of pulse equal to twelve beats per fifteen seconds, and in only a single instance did the pulse go below normal.

When the drug is given intravenously or in very large doses subcutaneously, the rise in pulse-rate in mammals is generally much more marked, while the subsequent fall is sometimes observed to go far below normal. In five experiments on mammals thus made, the average rise amounted to sixteen beats per fifteen seconds, the average fall below normal equal to seven beats per fifteen seconds.

An increase of pulse-rate may be caused by changes in blood-pressure, but from the results of my experiments on blood-pressure it will be seen that subcutaneous injections of apomorphia are powerless to affect pressure, if used in the same dose as was used in these pulse experiments. It is obvious, then, that the increase must be due to one or more of the following three possible causes: first, a stimulation of the heart; second, a stimulation of the accelerator nerves; third, a depression of the inhibitory nerves or centres.

In several experiments I destroyed the whole medulla oblongata. Artificial res-

piration was kept up. By thus destroying this great centre the vagi centres are annihilated, as well as the fibres of the accelerator nerves which run through the medulla, destroyed. This operation severs the connection of the heart with the central nervous system: therefore any change in pulse-rate that would occur would be attributable to a direct action of the drug upon that organ. Under these circumstances no increase of pulse-rate occurred. It has been clearly shown in another portion of my paper that apomorphia is a cardiac depressant. It is obvious, then, that the increased pulse-rate cannot be due to a stimulation of the heart or its ganglia. To determine whether the increase was due to a stimulation of the accelerator nerves, a rabbit was taken and the superior thoracic (inferior cervical) ganglion, through which all the accelerator nerves pass (Schiff), was excised; to make certain of a successful operation and a correct result, the accelerator nerves were cut in the cervical region, thereby making doubly sure that there was no influence exerted through these nerves.

It was found under these circumstances that the increase in the pulse-rate occurred as it does in the normal animal. There remains, then, but one other channel through which this increase could be produced,—*i.e.*, the vagi nerves. I therefore made six experiments in which those nerves were severed.

The parallel results of all my experiments in which the vagi nerves were cut points beyond any possible doubt to the cause of the increased pulse-rate being by a direct action of the drug on these nerves or centres. The increased pulse-rate is clearly shown to have no dependence whatever on the emesis; the increase never occurs after separation of the heart from the central nervous system; the increase occurs after section of the accelerator nerves and extirpation of the superior thoracic (inferior cervical) ganglion; the increase never occurs after section of the vagi nerves. It is therefore proven that the increased pulse-rate is due to an action through the vagi nerves. It is very obvious, then, that there are but three possible ways in which to effect this: 1st, a depression of the inhibitory centres; 2d, a depression of the inhibitory peripheries; 3d, a stimulation of the accelerator fibres of the vagus nerve. The increased pulse-rate cannot be an effect

of changes in blood-pressure, because it occurs from small subcutaneous injections, which are powerless to affect the pressure.

To determine whether the increased pulse-rate was due to a depression of the peripheries of the inhibitory nerves, I made section of those nerves, and found a certain current which would cause a definite effect on the inhibition of the heart. Apomorphia was then given and the same current applied at intervals, when it was found that the peripheries were as sensitive to galvanization as they were previous to its administration. I also tested the central ends of the nerves, and found a current which would cause a definite effect in blood-pressure by the inhibiting action of the vagi apparatus on the vaso-motor centres, and found that after the administration of the drug the effect was as great as heretofore. Goltze has shown that inhibition of the heart can be produced by certain peripheral irritations. I therefore mechanically irritated the intestines of a number of frogs, and in some of them got complete inhibition of the heart. It has been shown by Goltze that this inhibition is due to an irritation of the inhibitory centres. It therefore seems probable that the increased pulse-rate must be due to a stimulation of the accelerator fibres of the vagus.

BLOOD-PRESSURE.

The elaborate series of experiments which I have made in reference to the action of the drug upon the blood-pressure exhibit singularly uniform results. The fact that most other observers have not obtained similar results must have been due to an impurity of the alkaloid used. The apomorphine used in my experiments was made by different German pharmacists, and the results were in all cases the same.

Seibert (*loc. cit.*) found a temporary lowering of the blood-pressure. He then injected the same quantity of pure water into the veins as was used to dissolve the apomorphine, and found a lowering of pressure almost as great. He therefore concludes that apomorphia has no effect. Neither Quehl (*loc. cit.*) nor Bourgois (*De l'Apomorphin*, Paris, 1874) obtained any perceptible effect. Harnach was the only one finding a distinct change, but leaves it unsettled as to how these changes are produced.

My experiments were all made on dogs, cats, and rabbits. In these animals the

fall of pressure was immediate and distinctly marked from the effects of intravenous injections, even if the dose was very small. When the drug was administered subcutaneously, if a fall of pressure did occur, it was so slight as to be entirely insignificant. The reason of the non-effect on the pressure when the drug was thus given is clearly shown hereafter. Nine experiments were made upon the blood-pressure of normal animals, with identical results; one of these experiments is appended in detail:

Exp. LXXIV.—Dog.

Time.	Dose.	Pressure.	Remarks.
10.47½ A.M.		205-220	Manometer attached to right femoral artery. Injections made into the corresponding vein.
.47½	.01 gram.		
.48½		195-210	
.48½		225-230	
.48½		220-225	
.49½		205-215	
.49½		185-190	
.58		185-190	Clot in canula.
.58½	.01 gram.		
.59		180-182	
.59½		175-180	
11.02		170-	Clot.

In seven of the experiments there was a primary and secondary fall of pressure, separated by a more or less noticeable rise. It seems evident from this fact that more than one influence is active in the production of this triple change of pressure. A fall of pressure occurring immediately after intravenous injections of any drug is indicative of an action directly upon the vagi nerves or heart-muscle. A series of experiments upon animals with cut vagi were therefore undertaken. In these experiments, which were six in number, the primary fall of pressure either did not occur or was very slight; the secondary rise of pressure was more marked, and, indeed, in two instances completely overshadowed any tendency to a fall, so that the pressure was continually retained above the normal. It is plain that, whatever part the vagi may play, other influences are operative also.

Three experiments were then made upon the excised hearts of frogs, and it was found that they became paralyzed in a very brief time after immersion in a solution of apomorphine. In three observations upon

animals in which the heart was isolated by section of the vagi nerves and cervical spinal cord there was a continuous decrease of pressure. It is here shown that, although the vagi nerves were cut, the fall is continuous from the first, and that the involvement of these nerves in the production of the primary fall of pressure is only apparent, and was due to the effect of their section on the respiration,—a conclusion corroborated by the fact that in curarized animals in which artificial respiration was maintained the fall occurred as usual after section of those nerves. The direct influence on the heart is further shown by the action of subcutaneous injections, which are powerless to affect the pressure if given in the same or even considerably larger doses than were given intravenously. Thus, I found that .005 gram. injected intravenously would cause a marked fall, yet .06 gram. injected subcutaneously lowered the pressure only .008 metre, and an injection of .01 gram. caused but a lowering of .005 metre. I append in detail this last experiment:

Exp. CV.—Dog.

Time.	Dose.	Pressure.	Remarks.
10.21 A.M.		198-202	
.21½	.01 gram.		Subcutaneous injection.
.22		195-200	
.23		195-200	
.24½		200-205	
.25		195-202	
.26½		193-198	
.27½		205-210	
.28		205-210	
.29		205-208	
.29½			Clot in canula.
.30		195-200	

The very evident reason why a fall does not occur after subcutaneous injection is because but a small quantity reaches the heart at once, it being rapidly diffused throughout the circulation, while when it is given intravenously the whole dose is thrown immediately upon the heart and the paralytic action is at once manifest.

In four experiments to determine the secondary change and rise of pressure, it was found that after section of the spinal cord in the cervical region the rise did not occur, thus showing that it was due to an action on the vaso-motor centre in the medulla. The fall of pressure caused by apomorphia must be due to a direct depressant action on the heart, and the

temporary rise to a stimulation of the vaso-motor centre in the medulla, which is sufficiently powerful to supersede for a time the opposing action on the heart.

(To be continued.)

ANASARCA AS A SYMPTOM OF DEFICIENT VASO-MOTOR TONUS.

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Read before the Philadelphia County Medical Society, November 12, 1879.

I WISH to invite the attention of the Society to three cases which illustrate a most familiar ailment, but at the same time they have afforded me much food for reflection as to their pathology. I submit them in the hope that some others may be able to shed additional light upon the subject.

The theory which I propose to offer in explanation of these cases may appear to some visionary, but I am sure that reflection will convince the most sceptical that disorder of the vaso-motor nervous system is alone capable of explaining many obscure symptoms otherwise totally unfathomable. We cannot investigate in our patients the state of the circulation by means of the apparatus employed in the physiological laboratory, but on that account it is all the more important to secure all the available collateral evidence on the subject. Cases somewhat similar to my own have been reported, but they are not numerous, and I do not recall any in which anæmia has not been present. In the cases I shall relate, the opposite state of the blood was unquestionable.

Without further preface, then, let me relate the histories of my cases.

The first, G. W., I saw in June last: he had been working as a watchman on the wharf near South Street bridge. He was a stout, hearty man of one hundred and fifty pounds' weight, with no trace of anæmia, and previously he had enjoyed exceptional health. He had pronounced quotidian intermittent fever, which yielded promptly to cinchonia sulphate. The day after he sent for me, and I found him very dropsical. The anasarca was general, involving face, arms, and legs; there was a small amount of albumen in the urine, but no casts. The heart was acting as usual, though the rapidity of the pulse

was accelerated. No murmurs could be heard. The liver and spleen were of normal size, and the man expressed himself as feeling perfectly well except for the swelling.

He was ordered fifteen grains of cinchonia sulphate daily, with $\frac{3i}{4}$ ergot *fid.* ext., t. d. (the ergot was a preparation made by Mr. Wolff, at Twelfth and Chestnut Streets, with glycerin), also tr. iron.

Two weeks and a half afterwards he completely recovered, and has since enjoyed perfect health.

In September I saw another case; this time in the Philadelphia Hospital. In every respect the case was so similar that I could not fail to recall the former. The same plan of treatment was as effective, though his recovery was retarded till a month had elapsed.

In this case, as convalescence was prolonged, I used the sulphate of zinc, one grain t. d., in addition to the first-named remedies, and stopped the quinine after the third week.

The third case was a colored man raised in Virginia, who had suffered from chills and fever at intervals since 1863. After several of these attacks general anasarca supervened. He told me that he always rubbed himself with an infusion of salt and snake-root, and that in a variable space of time the swelling was, to quote him, "rubbed out."

Just before his admission his malarial fever returned, and following it the dropsy. The anasarca was as extensive as I have ever seen it, even in the worst cases of Bright's disease; the abdominal walls formed tumors from the puffing of the cellular tissue. There was no albumen in the urine; no enlargement of the liver; a moderate increase of the splenic dulness; no heart-disease.

In this case a careful microscopic examination of the blood (Nachet's method) showed only a trifling decrease in the number of the red blood-disks, an average of three examinations showing them to be four million seven hundred and fifty-nine thousand. The urine was rather high-colored, showing by tests an increase in the coloring-matters. There was also a moderate effusion of fluid into both pleural sacs. But, at the same time, the man's spirits were good, and his general health was remarkable. Indeed, he was with difficulty persuaded that he was a sick man.

The treatment here was similar, but pur-

gatives were freely exhibited. Digitalis was employed, and an effort was made to secure some action of the skin by means of hot-water bathing and steam baths. Operative treatment was invoked to relieve the hydrothorax, but no permanent benefit resulted, as the fluid returned, and one day, on rising suddenly from the bed, he fell over dead from asphyxia.

In a post-mortem I have rarely seen so healthy a collection of organs, with the exception of the spleen, which was twice its natural size; but the tissues were fairly reeking with serum, and there was effusion into all the serous sacs.

I would again, at this point, solicit your attention to the fact that these cases occurred in persons who were not anæmic.

Now, in studying these cases for an explanation, two methods have suggested themselves to me. In the first place, when an individual suffers from a chill the blood-vessels of the skin become markedly contracted and the internal blood-vessels as markedly dilated with blood; afterwards we have the febrile and sweating stages, during which the blood-vessels of the skin become dilated and remain so until a new nervous impulse induces contraction, repeating the chill.

Imagine that owing to the intensity and repetition of the action of the malarial poison the normal tonus of the inhibitory nerves is sufficiently impaired to occasion more or less persistent partial or total relaxation of the blood-vessels. The effect of widening the arteries and capillaries would be to over-fill the venous system, and thus would dropsy occur, precisely as in the cases of venous congestion from cardiac disease.

We can, I think, understand that after the malarial germs (?) are destroyed by the action of quinine, the effects of their action upon the nervous system should be more permanent, though the cause has been removed. Familiar illustrations of this are to be found in the enlarged spleen and impaired digestion of those suffering from malaria. This condition passes away whenever the nervous system is recuperated from the shock or the action of nervines assists nature.

In this connection I would remark that the colored patient cured himself with "simples;" in other words, the vaso-motor nerves, having recovered their tonus, resumed their functions. But we are not without experimental evidence on this subject.

The first experiments upon the subject of œdema were made by Lower in 1680. He tied the *venæ cavæ*, and found that œdema appeared in the lower extremities, and he ascribed the œdema to the diminished absorption of the intercellular fluid owing to venous congestion.

Valsalva and others repeated these experiments, but without a similar result. As usual, in the middle ground the truth was found.

Ranvier has proved that œdema depends not only on diminished absorption, but also upon increased exudation from the vessels. He first tied the *venæ cavæ* in the abdomen of a dog, and found, like Valsalva, that œdema did not appear; there was undoubtedly over-filling of the arteries, but the lymphatics were able to absorb the exudation without any assistance from the veins, and therefore no accumulation of fluid took place. He also found that upon cutting the sciatic nerve, on the wounded side, intense œdema occurred.

Venous congestion was undoubtedly present in both legs, as the *venæ cavæ* had been tied, but in one the nervous influence proceeding to the arteries through the sciatic nerve kept them contracted and prevented the exudation of more fluid than the lymphatics could absorb. In the leg in which the nerve had been paralyzed by division of the nerve, the vessels dilated, the limb became rosy and warm, and so much fluid was poured out that the lymphatics alone could not absorb it without the aid of the veins. Ranvier further proved that this was due to the paralysis not of motor but of vaso-motor nerve-fibres which are contained in the sciatic; because, after cutting in different animals motor and vaso-motor nerves in the lumbar region before they had united to form the nerve-trunk, when the motor fibres were divided as they issue from the lumbar vertebræ before uniting with the sympathetic fibres, complete paralysis of the legs was produced, and no œdema occurred; but if, on the other hand, he divided the sympathetic fibres passing to the sacral plexus, there was no motor paralysis, but the vessels dilated, and œdema occurred. The experiments first cited show us that paralysis of the vaso-motor nerves is an important factor in the production of anasarca. It will also be seen that the œdema in the animals experimented upon is analogous to the accumulation of fluid

in the cases of the patients whose histories I have cited. But deficient vascular tonus is not, I think, the only factor involved. Broadly speaking, the waste products of the animal economy are urea, carbonic acid, salts, and water. The carbonic acid and the water pass off by the lungs, the urea, salts, and water by the kidney, but by the skin also small portions of the above substances are eliminated. If the function of the skin is suspended, these substances accumulate in the system, and can, I think, aid in the production of dropsy. In my cases the skin was notably harsh and dry.

Again, the function of the skin is not alone dependent upon the blood-supply of the skin, but is also under the control of the innervation of the nerves supplying the cutaneous glands.

Dr. Foster states that the skin of dogs and cats can be made to act, and sweating produced, by stimulation of the sciatic nerve after clamping the aorta; and the same result he has obtained in the leg of a frog by stimulating the sciatic nerve after amputating the leg.* In cases similar to those before us, if exposure to cold occur at the close of a malarial attack, I can understand that the nerves can be influenced by the action of the cold and their function suspended, as easily as I can understand the dilatation of the blood-vessels of the lungs when a pneumonia is traced to a cold. Indeed, I can as readily understand the action of the malarial poison upon the nerves of the spine, just as I can understand the impaired nutrition of those suffering from repeated malarial seizures,—a condition of the system universally credited to an action of the poison upon the nervous system presiding over nutrition. Again, the inaction of the skin may be traced to the anasarca, which diminishes the activity of the circulation of the skin, of course impairing its functional activity. To sum up briefly what I have said, I would refer to the above explanation those cases of general anasarca, often preceded by malaria, in which no lesion of the heart, kidneys, liver, or blood can be diagnosed. I say blood, because my cases differ from others which I have seen reported, in the fact that there was

* The existence of secretory nerves, and their special influence over the secretions of the skin, have also been investigated by Dr. Isaac Ott and G. B. Wood Field in a series of original experiments. Their experiments are confirmatory, and may be found in the *Journal of Physiology* for 1878-79, entitled "Sweat Centres: the Effect of Muscarin and Atropin on them."

no associated anæmia. It appears to me, therefore, that the theory of a lesion of the vaso-motor nerves, and of the nerves presiding over secretion, is more certainly established. The blood-corpuscles, it is true, were counted in but one case, yet I am sure that my hearers will support the statement that anæmia can be recognized by physical examination alone, and the local congestions of anæmia must deceive in but a very few cases. I think the theory which I offer is especially useful in the explanation of those cases of moderate dropsy, which is also very often local, which is frequently seen in persons in middle life, and also in young persons who have been subjected to depression of nerve-tonus.

Before closing, let me ask you to consider a treatment by tonics, directed to restore the tonus of the nervous system, and the vaso-motor system especially,—viz., by strychnia, sulphate of zinc, tincture of chloride of iron, fluid extract of ergot, digitalis, and quinine. These drugs I have successfully employed, sometimes dispensing with the digitalis, especially in the cases of moderate anasarca, and also in cases of those whose stomachs would not tolerate this drug. In the first place, let me say that absorption of fluid from the tissues is, like its exudation into them, probably greatly controlled by the central nervous system. Dr. Brunton cites the experiments of Goltze and Nasse, in which the former found that when fluid was injected under the skin of the back of a frog it was rapidly absorbed, so long as the brain and spinal cord were unimpaired, but when these were destroyed little or no absorption took place.

Physiologically speaking, absorption is under the influence of nerve-centres, therefore stimulation of these centres will increase their physiological functions. Stimulation of a sensory nerve is capable of inducing contraction of the entire vaso-motor system. Apropos to this, Nasse has found that irritation of a sensory nerve actually did occasion increased absorption. To return, however, to the subject of medication by the drugs mentioned (zinc, ergot, iron, digitalis, strychnia, quinine), not only do they act as tonics to the nervous system, but some of them, viz., those which are astringents, possess a direct influence upon the blood-vessels through their local impression upon

the vaso-motor nerves, which fact I quote from Rosenstein's experiments recorded in Ziemssen's "Cyclopædia" and also in Dr. H. C. Wood's "Therapeutics."

Iron may be said to act also by restoring to the red blood-corpuscles one of their normal constituents, enabling them to perform more perfectly their function as carriers of oxygen to the tissues, and thus the material accumulated in the lymphatics and veins is first oxidized and then eliminated from the system.

In my last cases, because the effusion was so extreme, digitalis was employed. This drug, by its properties as a stimulant to the vaso-motor and cardiac systems, acts most favorably as a tonic diuretic, mainly, probably, through the increased efficiency by which the circulation is maintained. The only contra-indication occurs in cases where the stomach cannot bear the drug; and this remark will also apply to the use of iron.

Finally, let me allude to the value of strychnia as a tonic. This drug is very highly recommended by Dr. Lauder Brunton, to whose paper on the "Action of Tonics" I am much indebted.

He remarks that strychnia by its action as a respiratory stimulant can aid in thoroughly oxygenating the blood, thus promoting the efficiency of the circulation, and by this means also probably the more perfect elaboration of the red blood-cells is accomplished by the blood-making glands.

Further, he claims a stimulant action not only upon the dominant vaso-motor centre, but also upon the vaso-motor centres distributed through the cord. These centres, to quote his words, are so feebly developed as not to heed ordinary stimulation, but can be aroused by the use of strychnia to lend their aid to increase the vascular tonus. "For," says he, "it has been proved that after section of the spinal cord, which of course paralyzes the vaso-motor centre, the blood-pressure can be made to rise by the irritation of a sensory nerve."

But, while giving the prominence to strychnia to which its value as a respiratory stimulant in bronchitis and asthma and its use as a tonic entitles it, I would say that, of the other drugs to which I have referred, none has yielded to my clinical experience more valuable results than the sulphate of zinc. This drug, in small doses continued

for a considerable period, is, I think, more efficient than any other preparation of zinc, and it is an addition to our armamentarium with which we can combat nervous exhaustion, scientifically termed deficient vasomotor tonus, whether this deficient tonus is or is not accompanied by oedema.

NOTES OF A CASE OF FATAL PERITONITIS RESULTING FROM THE RUPTURE OF AN INTRA-PERITONEAL ABSCESS; WITH REMARKS.

BY LOUIS STARR, M.D.,

Physician to the Episcopal Hospital, Philadelphia.

CARL —, * æt. 48, a weaver by occupation, and a man of moderately temperate habits, was admitted to the medical ward of the Episcopal Hospital at noon on November 11, 1878. In 1870 he had contracted a venereal sore, but he had never had any symptoms of constitutional syphilis. In 1876 he had had intermittent fever. Otherwise his health had been good until one week before admission. At this time, apparently without cause, he began to have rigors, followed, after twenty-four hours, by slight fever, loss of appetite, abdominal pain increased by deep inspiration, and general prostration.

When admitted, he was greatly fatigued by the exertion of walking to the hospital. His face had an anxious expression, his skin felt clammy, his hands and feet were cold and livid, and his pulse was weak. There was little emaciation, and no jaundice or oedema. His tongue was heavily coated with a yellow fur, there was great thirst, anorexia, and diarrhoea, the evacuations being attended with pain and numbering ten or twelve daily. His abdomen was moderately distended, its wall was tense, especially in the epigastrium and along the right side, and the abdominal respiratory movements were diminished. There was dullness on percussion, tenderness, gurgling, and localized bulging in the right iliac fossa. In the right lumbar region there was also dullness, while in the right hypochondrium and all the remaining regions there was tympany. He complained of pain over the whole of the abdomen; it appeared, however, to centre in the right iliac fossa. There was no cough or expectoration; the respiration was costal in type and increased in frequency. Over the base of the right lung the percussion-resonance was impaired, the respiratory murmur was feeble, and pleuritic friction-sounds were heard. The heart was healthy. The urine was passed freely, and upon examination was found to be normal in composition. The patient was directed to be kept perfectly quiet in bed, to have a diet of milk and beef-tea with

a suppository of one grain of extract of opium as often as required to moderate the pain and diarrhoea, and a light flaxseed poultice was applied over the abdomen.

At 6 P.M. the pulse was 100, and the temperature, taken in the axilla, 101.5° F.

During the 12th, 13th, and 14th he grew slowly worse. Notwithstanding the opium used, he suffered considerable pain, slept poorly, and had frequent evacuations from the bowels, the motions being liquid, dark green in color, and very fetid. The pulse ranged from 92 in the morning to 104 in the evening, the temperature from 98.5° to 101.5°, and the respiration from 28 to 40. At 5 P.M. on the 14th vomiting set in.

On the 15th the following notes were made. Has had obstinate vomiting since yesterday afternoon, thirst is excessive, and liquids are regurgitated almost as soon as swallowed; tongue heavily coated in the centre, clean and red along the edges; bowels less frequently moved. Abdomen more tense and distended; respiratory movements of the abdominal wall abolished; tenderness still most marked in right iliac fossa, but more generally distributed than before; dullness on percussion over the whole of right side; marked distention of knuckles of intestine on left side, causing irregular projections of the parietes; palpation on this side produces loud borborygmi. Digital examination of rectum negative. Patient's face is very anxious; he has soreness and cramp-like pains in the abdomen; there is great prostration, with occasional rigors, moist skin, and cold extremities. Decubitus indifferent. Urine voided naturally. Respiration costal, 32 per minute; pulse feeble, 129; temperature 99°.

Sufficient opium was administered by the rectum to maintain a slight degree of narcotism; a fluidounce of milk with two fluidrachms of lime-water was given every hour, the alternate doses containing a teaspoonful of brandy, and the poultices were kept up.

On November 16 the pain, although blunted by the opium, continued, and was aggravated by any movement of the body. There was occasional vomiting, and several liquid stools were evacuated. The abdominal tenderness and distention remained about the same in degree, but the latter was more uniform. The area of dullness extended so as to occupy nearly the whole of the abdomen, and the skin over the sides and the lower portion of the belly assumed a dusky-red, maculated appearance, the redness disappearing on pressure and slowly returning after its removal. Respiration 32, pulse 120, temperature 99° to 100°.

On the morning of November 17 the prostration was extreme; the decubitus was dorsal, with the legs drawn up; there were occasional colic pains; the pulse was feeble and rapid, 132; the respiration hurried, 56; and the temperature high, 102°. There was insatiable thirst; no vomiting, but prolonged

* History taken from the ward notes of Dr. J. M. Anders, Resident Physician.

paroxysms of hiccough were excited by taking anything into the stomach; the bowels were moved at short intervals. The urine was passed involuntarily during the attacks of pain. The abdominal distention was greater than before, and the red maculation was more diffused, and disappeared less readily on pressure. Death occurred at three o'clock in the afternoon, consciousness being retained until almost the last moment.

An *autopsy* was made twenty-two hours after death. The body was much emaciated, decomposition had already set in, and the whole surface of the abdomen was discolored.

On opening the abdomen, a very small quantity of fetid gas escaped. The great omentum was shrunken into a narrow band, extending from the left hypochondrium to the middle of the umbilical region, and thence directly downward to the pelvis. Along its right edge it was quite firmly adherent to the abdominal wall above and to the intestines below, and thus divided the peritoneal cavity into two portions, the right containing dark, greenish-brown, ill-smelling pus in sufficient quantity to push the intestines towards the opposite side, and the left a smaller amount of laudable pus. Both the parietal and visceral layers of the peritoneum were thickened and covered with a deposit of lymph about one-sixteenth of an inch in depth, this was readily detached, yellow in color on the left of the omental adhesions and grayish-brown on the right; flakes of lymph were also found floating in the purulent matter. There were numerous agglutinations of the intestines to each other and to the abdominal wall, especially in the neighborhood of the cæcum. These were easily broken up, except in two positions, one just at the bend of the ascending colon, where the gut was adherent to the parietal peritoneum over a space an inch and a half in diameter, and the other, evidently much the older, in the right iliac fossa, where the right side of the cæcum was bound to the peritoneum, covering the iliacus muscle. In each situation the attachments were so firm that they were inseparable by any means short of dissection.

The cæcum itself was greatly distended, and upon drawing it to the left, so as to expose the anterior edge of the adhesion, a small opening, one-fourth of an inch in diameter, with thin and ragged margins, was disclosed. This opening led into an oval cavity, as large as an English walnut, lined with a layer of lymph, filled with pus of the same character as that found in the right segment of the abdomen, and having for its walls the thickened parietal layer of the peritoneum on the outside and the cæcum on the inside. The mucous membrane of the cæcum was healthy, and no trace of a previous perforation could be found. The vermiform appendix, though somewhat involved in the adhesion binding down the cæcum, presented

nothing abnormal. The ascending colon was greatly distended, its mucous membrane was thickened, and directly beneath the position of the firm attachment to the abdominal wall there was an isolated spot of deep congestion. The rest of the large intestine was nearly empty and much reduced in calibre. The small intestine was distended. The stomach was displaced to the left, and there was congestion of its mucous coat. The liver was enlarged, there were flakes of lymph upon both surfaces to the right lobe, and the glandular tissue was fatty. The spleen and kidneys were healthy.

Upon examining the thorax, the heart and left lung were found to be normal; there were firm pleuritic adhesions over the whole surface of the right lung, and the lower lobe was congested.

Remarks.—When this patient first entered the hospital, the general symptoms and the signs obtained by physical examination of the abdomen led to the diagnosis of acute general peritonitis,—an opinion which was confirmed by a brief observation of the case. But, bearing in mind the extreme rarity of idiopathic peritonitis, the point of greatest interest was to determine the cause of the inflammation. Of this the previous history furnished no clew, nor could any aid be obtained from the rational symptoms, the majority of these being referable solely to the peritonitis. Nevertheless, the centralization of the pain and tenderness in the right iliac fossa, with the dulness on percussion and the local bulging, indicated that this was the situation in which to look for the solution of the problem.

Among the different lesions occurring in the right iliac fossa two only were at all likely to be present under the circumstances, namely, typhlitis or perityphlitis. Between these two it was impossible to decide, though it seemed most probable that the peritonitis was due to typhlitis with rupture of the appendix vermiformis, both on account of the comparative infrequency of perityphlitis, and because of the rather sudden onset of the attack. The incorrectness of this supposition was manifest at the autopsy upon the discovery of the intra-peritoneal abscess. This abscess, together with the surrounding firm adhesions, had undoubtedly been the result of a circumscribed peritonitis (produced most probably by some affection of the cæcum,—perhaps fecal accumulation), which, judging from the nature of the union and the healthy condition of the

mucous membrane of the cæcum, had long antedated the attack that caused death, and which had never given rise to symptoms sufficiently severe to fix the attention of the patient. So soon, however, as the abscess ruptured, the ordinary effects of a discharge of purulent matter into the peritoneum ensued, the inflammation extending first from the right iliac fossa to the right side of the abdominal cavity, and subsequently to the whole peritoneal surface,—the fact that the right side was primarily affected being indicated by the character of the pus, the firmer nature of intestinal agglutinations in this position, and the apparent effort at limitation seen in the continuous line of omental adhesions.

The slight escape of gas on opening the abdomen, and the condition of the pus on the right side, were rather suggestive of intestinal perforation. But the amount of gas was very trifling, and was attributable to post-mortem changes, while the appearance of the pus was explained by the source of the inflammation. Besides, neither the gas nor the pus had any fecal odor, the latter was free from intestinal contents, and, most important of all, no rupture of the intestinal wall could be found.

The partial collapse of the greater portion of the large intestine was due to obstruction caused by the adhesion at the upper end of the ascending colon.

The peritonitis, in this instance, ran a very typical course, the only unusual features observed being the dusky-red maculation of the skin covering the abdomen, and the condition of the bowels. The first symptom has not been present in any other case of peritonitis that has come under my notice; it appeared to result from interference with the circulation. The occurrence of diarrhoea, on the contrary, is not rare, though constipation, depending on paralysis of the muscular coat of the intestines, is the usual state.

As the supposed exciting cause was as irremediable as that discovered at the inspection, the only indications for treatment were to limit, as far as possible, the inflammatory process, to lessen the pain and the gastro-intestinal irritability, and to support the patient's strength.

HAKIM HAFIZ FAKHARUDDIN is the Arabian-Nights-like name of a Hindoo contributor to the *Lancet*.

NOTES OF HOSPITAL PRACTICE.

PENNSYLVANIA HOSPITAL.

CLINIC OF DR. R. J. LEVIS.

Reported by Dr. GEORGE F. SOWERS.

THE MECHANICAL TREATMENT OF POSTERIOR ANGULAR CURVATURE OF THE SPINE—MR. GEMRIG'S IMPROVED SPINAL JACKET.

I SHALL present for your consideration this morning an improved mechanical device for the treatment of those diseases of the spine which require rest and support. They are diseases of either the bony, the cartilaginous, or the ligamentous structures of the spine, and their most frequent form is the posterior angular curvature to which the name of Pott's disease is given. When loss of substance of the bodies of the vertebræ occurs, the superincumbent weight of the structures above the seat of disease bends the spine forward, and the unaffected spinous processes project backward. This bending and crushing action of weight is added to by the action of the muscles on the anterior portion of the trunk, particularly the muscles of the anterior abdominal parietes. Besides general hygienic influences, the great elements in the treatment of this disease are to maintain rest and to give mechanical support to the spine. If cases of spinal caries could be always seen in their incipency, rest in the horizontal position would be almost the sole essential of treatment; but as we meet them in practice great structural changes have usually taken place, and they must be so mechanically supported as to allow them to enjoy exercise and open-air life.

Many of you who have attended this clinic have seen me apply the plaster jacket of Dr. Sayre, which has done so much good, and of the method of application of which I shall again speak later in my lecture. I now present to you a most useful improvement on the appliance of Dr. Sayre, devised by our excellent surgical instrument maker, Mr. Gemrig. Some of the inconveniences of the plaster jacket are the difficulty of its removal, its liability to bear uncomfortably on the more salient points of the trunk, its tendency at times to break up or to crumble, and the fact that the patient remains sealed up in the stony encasement without the possibility of performing any ablution of the surface.

In making this leather jacket of Mr. Gemrig, an accurate mould of the chest

is taken by first applying the plaster jacket, with the patient suspended, so as to give the form of the trunk when relieved of the weight of the head and shoulders, the spine being as near as can be in its normal line. The jacket is then cut open in the middle line in front before it has become quite hard, and from this mould a cast of the suspended body is made by pouring into it a quantity of mixed plaster. On the cast of the trunk which is finally made, a piece of half-tanned, thick leather is evenly applied, in a thoroughly wet state, moulded accurately, and allowed to dry in position. The leather encasement fits accurately to the cast, and on being removed is found to represent exactly the surface of the thorax, showing the details of unevenness of the intercostal and intermuscular spaces. An accurately-fitting and very durable leather jacket is the result; this is lined finally with soft chamois-skin, cushioned at the axillary edges, ventilated by fenestræ cut in it (which ventilation, by the way, is impossible in the ordinary plaster bandage), and fitted with eyelets and lacing-cord, as a permanent arrangement to be worn for an indefinite period. This jacket has the merit of being almost indestructible for practical service, is readily removable for ablution of the body, and can be worn continuously or be taken off at night, as may be specially required.

In the case of the child before you the posterior angular curvature is very high in the dorsal region, and the forward yielding, from loss of substance of the bodies of the affected vertebræ and their cartilages, has allowed the head to sink downward and forward, adding to the effect of the deformity and the distress of the little sufferer; in fact, previous to the application of this apparatus she was compelled, in walking, to support the head and shoulders by placing her hands on her thighs. Now, however, she can get around without thus supporting herself.

Now, in addition to the admirable spinal support by the leather jacket on the principles originated by Dr. Sayre, you see how, by the addition of a "jury-mast," as he calls it, the head of the child is supported in an erect position, and the yielding spine relieved of its superincumbent weight, by a rod reaching above the head, and from which extend supporting bands beneath both occiput and lower jaw.

This excellent improvement of Mr. Gem-

rig on the plaster jacket costs comparatively little, but with the poorest classes of patients—and they are, unfortunately, the commonest sufferers from spinal deformity—you may effectively resort to the plaster and bandage encasement, and it can often be worn for a number of months without change. You may remember that, having fitted a plaster jacket, the surgical instrument maker can speedily pattern from it the more convenient and effective leather apparatus.

In closing, I shall give you a few details as to the manufacture and application of the simple plaster jacket. The surface of the trunk is first bathed and then thoroughly dried; a skin-fitting, seamless shirt, without arm-holes, but with straps that can fasten over the shoulder, is then put on the patient. Before applying this dressing it is essential that the patient be suspended. This may be done in various ways. A hook driven into the ceiling, from which a rope is suspended and to which a sling that catches the chin and occiput is attached, will answer. A more convenient form of apparatus is this tripod support: through a pulley a cord passes, to which is attached the chin-collar; a steel cross-bar is also attached to the tripod, by which bands may be passed under the arms of the patient, thus providing additional support. By these shoulder- and chin-bands the patient may be elevated till merely the tips of the toes rest on the ground. Instead of using the shoulder-straps, the patient may grasp the cross-bar by the hands above the head, by which all the trunk-muscles are put in a state of extension.

In making the bandage coarse crinoline is employed, or a coarse muslin with rather large meshes or open texture. This is passed through dry plaster of Paris, which is thoroughly rubbed into the meshes. A number of these bandages should be prepared and put away in an air-tight box, to be used when required. When the bandage is to be used it is simply dipped in water and wound round the patient's body, each turn of the bandage covering half of the previous turn; over all a little wet plaster is rubbed, and the bandage is then allowed to dry.

TETANUS FROM HYPODERMICS.—In the *British Medical Journal* for November 1, 1879, is reported a case in which fatal tetanus was produced by a hypodermic injection of morphia.

TRANSLATIONS.

ARSENIC IN DISEASES OF CHILDREN.—Dr. Simon, in a lecture on infantile therapeutics (*Le Progrès Méd.*, October 25, 1879), speaks favorably of arseniate of sodium, not only in certain diseases of the skin, but also in young patients tending to tuberculous or nervous disease, or pulled down by malaria. Far from considering the use of arsenic in diseases of children dangerous, he advocates its employment in many instances, beginning with minimal doses, gradually increased from day to day until the maximum is reached, maintained at this point during several days, and then slowly decreased; this same course then to be repeated. At the end of two or three weeks the arsenical treatment is to be suspended for a fortnight, and then recommenced as before. Simon recommends the arsenical waters of Mont Doré and Bourboule very highly for anæmic and scrofulous children, and in general where sea-water and sea-bathing are ordinarily employed. He advises that in the case of children arsenic should never be used externally. Among the internal preparations he ordinarily makes use of Fowler's solution, of Pearson's solution, and of the arseniate of sodium and iron.

Fowler's solution, as is known, contains one per cent. by weight of arsenious acid, one minim containing one-hundredth of a grain. Pearson's solution, less familiar, is a solution of arseniate of sodium containing one grain of the salt to the fluid-ounce. Simon usually employs it according to the following formula:

R Sodii arsenit., gr. i;
Aquæ destillat., fʒviiij;
Aquæ melissæ, q. s. M.

This is a good formula as a basis for dosage. Each teaspoonful contains about one-sixtieth of a grain of arseniate of sodium, and the aromatic water may be added in sufficient quantity to give any dose required. He does not administer arsenic to children under two years of age, but beyond this he gives it without hesitation, beginning with one-third of a teaspoonful, then increasing to one-half, three-fourths, etc., until a whole teaspoonful (one-sixtieth of a grain) is reached.

Simon gives the arseniate of iron in pill form in the dose of one-sixtieth to one-thirtieth of a grain in the course of the day for large children, increased gradually to

one-sixth and even one-third of a grain in the twenty-four hours.

PERFORATION OF THE CRANIUM BY PERICRANIAN TUMORS.—Dr. H. Petit, at a meeting of the French Medical Association (*Gaz. Hebdom. de Montpellier*, 1879, p. 140), remarked that tumors situated about the cranium may penetrate the bony envelope, even over a large surface, and may come in contact with the brain itself, without giving rise to any accident. Ablation of these tumors, however, may cause death in the middle of the operation by syncope, or some days subsequently by meningitis. In some instances the patient has survived a sufficient length of time to permit cicatrization of the wound made by the operation. The existence of continuous, fixed, penetrating cephalalgia may, in the absence of cerebral phenomena, give rise to the suspicion of perforation; but this cephalalgia may be masked by neuralgia of the face, or, on the other hand, the cerebral phenomena may exist without perforation. Diagnosis, therefore, is a matter of great difficulty, and the surgeon who operates in such a dubious case should be held responsible. The tumors which ordinarily cause perforation are naso-pharyngeal polypi, carcinomata, epitheliomata, sarcomata, and occasionally osteomata.

RESEARCHES ON THE HYMEN AND VAGINAL ORIFICE.—M. P. Budin has recently published some interesting papers on this subject (*Le Progrès Méd.*, 1879, No. 35, *et seq.*), in which he gives the result of numerous examinations. He finds not only that the first marital approaches frequently take place without pain and without rupture of the hymen, but also that this membrane varies very greatly in its size and shape. From a medico-legal point of view, these researches are of interest, and especially as they are founded on numerous careful investigations.

CASEOUS CORYZA.—At a recent meeting of the Société de Chirurgie (*La France Méd.*, 1879, p. 670), M. Perrier showed specimens from a patient suffering from caseous coryza. More than half a glassful of caseous plugs were presented which had been extracted from the nasal passages. The patient was cured.

NUX VOMICA IN DIZZINESS.—Mader (*Wien. Med. Blätter*, 1879, No. 8) gives extract of nux vomica, to the amount of one and a half to three grains a day, with favorable results.

PHILADELPHIA MEDICAL TIMES.

PHILADELPHIA, DECEMBER 20, 1879.

EDITORIAL.

NATIONAL BOARD OF HEALTH.

THE recent meeting of the American Public Health Association was eminently successful in every way, and must do much good, not only by its direct results, but also by stirring up and encouraging sanitarians in all portions of the country, and by helping them towards that unity of work and methods which is so necessary for the highest success.

Yellow fever, quarantine, and the various questions growing out of the recent epidemics were, of course, the supreme topics of the hour, but far outreaching all others in importance was that of the establishment of a National Board of Health. Yellow fever comes and goes; epidemics of all sorts sweep over continents, to disappear for years; but the question of proper national health organization is co-eternal with this republic, both in its interest and in the consequences of the way in which it is answered. "For men may come and men may go, but I flow on forever."

Under these circumstances, and as the gathering together of Congress presses on the time for action, it is remarkable that the medical press have so little to say on the subject. In order that we ourselves may not be derelict, we most earnestly call the thoughts of our readers to the problem.

At the Association the following preamble and resolutions were passed in regard to the National Health Board:

WHEREAS, The National Board of Health has, in accordance with the law which created it, requested the advice of the American Public Health Association regarding the form of a permanent national health organization of the United States, including its relations to quarantine, both maritime and inland; and,

WHEREAS, The opinions of the Advisory Council of the

Association upon the subject of health legislation, collected and presented to this body through Dr. J. M. Toner, Chairman of the Council, have been duly considered: therefore,

Resolved, That in the opinion of the American Public Health Association the present National Board of Health has been of such vast service to the country that it is not expedient to make any essential change in its organization, and that any minor improvement in details should be left to the Board itself.

2. That the investigations which have been commenced by the Board are approved and should be continued, and that similar investigations should be undertaken by it into the consideration and prevention of other diseases as well as yellow fever.

3. That Congress should appropriate sufficient funds to enable the Board to employ the best talent and apparatus in such scientific and practical inquiries.

4. That the operation of the existing quarantine law, and of the rules and regulations prepared by the National Board of Health on that subject, has accomplished great good, and that no change in the law should be made without the most careful and serious consideration.

5. That in the opinion of this Association the national quarantine should be under the direction of the National Board of Health and of an executive committee to be selected by that body.

6. That this Association has no suggestions to make with reference to any amendments to existing legislation in regard to quarantine, preferring that they should come from the National Board of Health, as the most competent body to advise whatever may be best.

7. That it is expedient for the National Board of Health to call an international congress for the discussion of the very important subjects of international sanitary quarantine, etc.

8. That it is the duty of the general government to build, equip, and conduct, at the mouth of the Mississippi River, a quarantine station at such a place as may be designated by the National Board of Health.

9. That the Secretary of this Association be instructed to forward to the National Board of Health a certified copy of these resolutions, together with the reports and documents of the Advisory Council, and that the Executive Committee be instructed to take such action, during the next session of Congress, as may seem best suited to promote legislation in accordance with these resolutions.

A study of these resolutions seems to show that they are very skilfully framed to express confidence in the present Board and the feeling that it is well to let well enough alone. They certainly have the merit of not leading to overhasty action, —a merit which will not be unappreciated by those who, last year, pleaded so earnestly for tentative measures, in order that the various elements might crystallize slowly in the unknown mixture of wants, physical and legal laws, and possibilities, which made up the so-called question of national health.

It does seem to us, however, that something beyond what these resolutions call

for might possibly be attempted at present with safety.

The experiences of the past summer show that there are two distinct offices to the National Board of Health, and we are not certain that the time has not arrived for the at least partial separation of these functions. These offices may be called, with sufficient accuracy, executive and legislative. Of course, except in the interpretation of laws a national board of health can have no immediate powers other than executive, but its indirect power ought to be enormous. A recommendation to Congress from a properly constituted body of experts ought to be almost tantamount to a passage of the law. It is notorious that within a certain scope the National Academy of Science is becoming very powerful, and it is one of the most hopeful signs of the times that our Congressional representatives should give so much of weight to those whose opinions ought to have weight, although they are not backed up by any political power. What the National Academy is in the province of general applied science, *i.e.*, the recognized expert adviser of Congress, such should a national health board be in regard to scientific questions arising within its domain.

It is plain that any one man or any two or three men, living in Washington City, ought not to be trusted with the decision of questions involving the whole United States. Even the present National Board is evidently too small to act at best advantage as an advisory legislative council or in the interpretation of Congressional directions. There never was a more absurd quarantine enactment than that attempted to be enforced in this port last summer by the National Board. Is it conceivable that if Philadelphia had had a good representative upon the Board such a mistake would have been made?—a mistake which, it is to be remembered, did more to weaken the hold of the National Board upon the governing classes of this section of the country

than a dozen successes can do to strengthen such hold. If there had been a Philadelphian in the Board, he of course would have been consulted by the executive officer, even if the subject had not been discussed in full meeting of the Board.

To our thinking, it is becoming clear that a board which is to act wisely for all interests and localities, and which is also to have the necessary influence upon Congress, must be truly national; probably it should be composed of one member from each State of the Union. What is a sanitarian from New Orleans to know of the especial sanitary needs of a New England seaport or of San Francisco? How much more of influence is it probable that a Georgian expert will exert upon the Congressmen of Georgia than upon those of Maine or Minnesota? A large board could only meet at long intervals; probably once a year would be sufficient. By its very size, still more by the rarity of its meetings, such an organization would be executively inefficient; but the present body also seems to us too large and too scattered for advantageous action. A member of the Board told us that during the past summer he had travelled fifteen thousand miles for official purposes, all of which, of course, has to be paid for by some one.

Executive action, to be efficient, must be concentrated in one person or in a small, compact committee living in one city or closely adjacent cities. The duties of the executive, as the functions of a central board of health become wider (as they must under progressive development), will become very onerous, and should be attended to by one person whose whole attention is given to the one subject, and who should therefore be well paid for his time, and be a man of first-rate executive and scientific ability. Such a man undoubtedly could be procured for the salary paid to the head of the United States Geological Survey, the appointment being permanent, and removal requiring a legal

process before the National Board of Health. Supported by an advisory committee which could readily be called together in an emergency, such health officer could well perform all the executive duties required, and in every way both aid and be guided by the National Board itself.

The proposition, then, which *at present* commends itself to our judgment, and which we should like to see freely discussed and criticised, is that the National Board of Health should have represented in it each State of the Union; that its meetings should be held once or twice a year; that in it should reside all the judicial and advisory powers of the Board; that its president should be a national health officer, appointed as the judges of the Supreme Court are appointed, and removable only for cause; and that all executive functions should be performed by this officer, aided by a small advisory committee so constituted that it could be readily summoned upon any emergency. The expense of such organization would not be in any way excessive; indeed, in the long run, probably not equal to that entailed by the present organization. Expense is not, however, the question, but efficiency; and a policy which for a few dollars would dwarf a project so important as the one under consideration would be inconsistent—we will not say with the dignity of this great nation, but—with the far-famed shrewdness of the American people.

THE annual report of the Surgeon-General does not contain very much that is at the same time of interest and unknown to the general profession. We note, however, the usual reports of slaughter of and by Indians, also; that the National Medical Library has been increased by the addition of three thousand volumes and three thousand five hundred pamphlets; that the work on the concluding volumes of the

medical and surgical histories of the war is being pushed rapidly forward, the surgical volume having two hundred pages of it already stereotyped; and that two vacancies exist in the Army Medical Corps in the grade of surgeon and twelve in the grade of assistant-surgeon.

CORRESPONDENCE.

LONDON LETTER.

IN the present letter I propose to consider the subject of the digestive ferments of the body. It is a subject on which little is generally known, but on which it is very desirable that more be known. Feeble digestive power seems to be becoming more and more common among us. From the failure of the teeth—so almost universal now—to feebleness of power in the stomach and inactivity in the intestinal canal, the power to assimilate food seems to be waning among us in the latter half of the nineteenth century. Artificial teeth, artificial pepsin, artificial diastase, artificial pancreatic juice, thousands of quack pills to keep the bowels open,—all testify to the growing necessity for aids to nature's assimilative processes. It is not necessary, and it is scarcely desirable, to discuss the asserted use of electricity to aid in the development of nerve-currents in the viscera. The highly-elaborated machine—man—is now only to be kept up by artificial nutrition; his albuminoids must be partially digested, his fats emulsified, and his starch helped at least half-way on the road to sugar, in order that he may be fed sufficiently. Just as the farmer finds that he can fatten his cattle more cheaply by cooking sundry foods, and so spare the digestive process in his store-animals, so the physician finds that healthy tissues in dyspeptics can only be secured by elaborate preparation of the food before it is swallowed.

The groundwork of this letter is an article by Dr. Wm. Roberts, F.R.S., of Manchester, entitled "Observations on the Digestive Ferments, and their Therapeutical Uses." Dr. Roberts is the author of the well-known treatise on "Urinary and Renal Diseases" so favorably received on your—as well as our—side of the Atlantic. He commences with diastase, otherwise ptyalin, in the saliva, whose sole power is that of converting starch into sugar. In early infancy in children and during the suckling stage of calf-life the parotid gland secretion has but a very feeble power over starch. Gradually the power is developed, and in the calf the sweetbread is lessened in size comparatively as the parotid glands develop. At first the milk must be the food of infants, and starch be withheld

until the power to convert it into sugar is developed. Now, in order to find diastase artificially to supply its deficiency in the saliva, malt has been largely used of late. If properly prepared, malt extract is rich in diastase and has a high power of digesting starchy matters. A large number of malt extracts, however, are powerless because prepared at a too high temperature. Any heat above 157° F. is destructive to diastase in solution. Even when a reliable malt extract has been procured, it is important to choose the right time for its administration, as the action of diastase upon starch is arrested in the stomach by the presence of the acid in the gastric juice; and this arrest is permanent, for, under ordinary circumstances, not a particle of diastase in an active condition escapes through the pyloric ring. In order, then, to get the utmost advantage from artificial diastase, it should be mixed with the food before it is taken. Malt extracts are not unlike treacle, and are sweet; consequently they may be used advantageously to sweeten food, and can be mixed with combinations of starch and milk with advantage in every way. When the temperature of the starch and milk has fallen below 157° F., the malt extract should be stirred in it. As to how to find out this temperature, it is simple. We cannot sip in teaspoonfuls any substance which has a higher temperature than 150° F.; consequently, when the mess has become so cool that it can be sipped, then the malt extract can be added, and the whole can then be taken. As to how long the complete mixture can stand before it is swallowed, so as to get out the full value of the diastase, Dr. Roberts does not say; probably two or three minutes are sufficient. By such means, then, we may materially aid the action of the human saliva upon starchy foods; and for a great many children such action would be a great boon.

Then comes the question of the digestion of albuminoids by the gastric juice. The special ferment of the gastric juice is pepsin, which digests the albuminous and gelatinous elements of our food. Pepsin is only active in the presence of an acid, and the normal acid of the stomach is hydrochloric acid; other acids, however,—lactic, phosphoric, and citric, etc.,—render pepsin active, but not so energetically active as does the hydrochloric. Under the influence of pepsin, proteid compounds are changed into peptone or peptones. The plural "peptones" is often used, because the products arising from the digestion of proteid compounds exhibit considerable variations *inter se*. The change impressed on a native proteid by its conversion into peptone is probably simply a hydration,—a change similar in character to the hydration undergone by starch in its conversion into sugar by diastase. As soon, however, as a peptone enters the blood-current, it is immediately turned back into a proteid (serum-

albumen). So quickly does this retransformation take place that no peptones can be detected in the lacteals or in the portal vein. The gastric juice has also the property of curdling milk, but this it appears is due to another ferment than pepsin, though what this ferment is is not yet known. To return to pepsin. The power of pepsin to digest albuminoids in the presence of hydrochloric acid in a vessel kept at the temperature of the body has long been known, and the resultant idea of using artificial pepsin in order to aid digestion in persons of weak digestive powers has long been in operation. Pepsin preparations are specially adapted for administration by the mouth immediately after a meal. A specimen of *liquor pepsina* shown by Dr. Roberts to the Society he addressed was so potent that a teaspoonful of it added to six ounces of acidulated water dissolved an ounce of chopped white of egg completely in three hours. He thought that many who had lost their faith in pepsin might be encouraged by this to give an energetic preparation of pepsin another trial. Not only can pepsin be given by the mouth, but preparations of meat already digested by pepsin may be procured.

Then comes the question of the pancreatic secretion. Recent observations have shown that the pancreatic juice has four distinct actions upon our food-stuffs: (1) it converts proteids into peptones in alkaline media; (2) it curdles the casein of milk; (3) it transforms starch into sugar; and (4) it emulsifies fats. But for the pancreatic fluid to convert proteids into peptones an alkaline medium is requisite. The ferment which does this is trypsin. Now, in the presence of an acid trypsin is inert. Just as the diastase fermentation of starch is arrested when the acid gastric juice is reached, and the action of pepsin in an acid medium is set up in the stomach, so in its turn, when the food passes the pyloric ring and becomes alkaline, then the action of pepsin ceases and that of trypsin begins. The pancreas is also rich in diastase, so that the conversion of starch into sugar is resumed, and the two hydrating transformations go on side by side. At the same time the emulsifying of fat is carried on. These several actions of the pancreatic fluid are most important in the assimilation of food, and, of course, the idea soon took root,—how could artificial pancreatic juice be given to the dyspeptic bimana? Several preparations were soon in the field, and it was asserted that fat could be emulsified in the body by giving pancreatic fluid by the mouth. But, unfortunately, there is the acid in the stomach by which the pancreatic ferments are destroyed to be encountered. Here is a dragon at the portal which bars the way! An aqueous pancreatic extract, with just enough of spirit to prevent its decomposition, was exhibited. It was a limpid, straw-colored fluid, with very little taste or smell of its own, and of nearly neutral re-

action. But, though so pale and bland, it is an elixir of remarkable powers; it curdles milk like rennet; it changes starch into sugar with unrivalled energy; with the aid of a little alkali it transforms albuminous substances into peptones; finally, it emulsifies fats more perfectly than any other known agent. Yes! there stands Dr. Roberts with the elixir of life and comfort for thousands in his hands; but there is that gulf to be passed, — the acid stomach. There he is on Mount Pisgah, with the promised land within sight. Moses understood how to diet the dyspeptic Israelites, and the dietary which he gave them was admirable in its sagacity. Here is another prophet within sight of the promised land. Will he reach it? How does Dr. Roberts propose to pass his pancreatic solution rendered powerless by an acid through the acid stomach so that it shall retain its potency? Guarded by an alkali, it may get through the stomach, but what then becomes of the acid digestion of proteids by pepsin? Dr. Roberts is equal to the difficulty. He waits till the digestive act in the stomach is nearly completed, or what he calls "towards the tail of gastric digestion," and then, "under the guardianship of a dose of alkali," he conveys his pancreatic solution into the duodenum, "where it arrives opportunely to aid in the important work of intestinal digestion." No one can help admiring the astute skill with which Dr. Roberts sees his way through a maze not to be successfully unravelled by most minds; and his work of showing how the difficulties to be encountered are to be surmounted and conquered is of priceless value to the different members of the profession in their combat with indigestion.

Before proceeding to utilize the digesting power of the pancreatic secretion, Dr. Roberts has something to say about albuminoids converted into peptones as food. He says, "If you subject any native article of food — say milk, bread, or meat — to artificial digestion with pepsin and acid, you utterly destroy the grateful odor and taste and the inviting appearance which made it desirable as food, and you convert it into a nauseous mess from which the human palate turns away in disgust. The unsavoriness of digested food is, however, not due to any ill taste or smell inherent in the peptones themselves, which, when purified, are both odorless and tasteless, but to a number of by-products of various kinds, volatile acids and other matters, which accumulate as digestion proceeds. One of these by-products is a bitter flavor, which is a constant and noteworthy characteristic of gastric digestion." Certainly, the process of digestion out of the body throws light upon those cases of indigestion which are met with, where the patient complains of bitter taste in the mouth, with heartburn, some time after each meal. It is, then, these "by-products" which are the cause of trouble with many dyspeptics. To

deprive the digested mass of these "by-products" and secure pure peptones is a process so costly as to preclude all chance of their coming into general use.

Dr. Roberts then proceeds to describe his method of procuring peptonized milk. If this can be done without materially altering the characters of milk, the problem of feeding dyspeptics and invalids is largely solved. But he finds to *completely* peptonize milk renders it quite unfit for food; though it can be *fractionally* peptonized to the extent of three-fourths of its casein without diminishing its agreeable qualities. After repeated experiments with milk and the liquor pancreaticus, he found "that the milk was wholly peptonized in two hours and a half, that two-thirds of the casein was converted in the first half-hour and three-fourths in the first hour, and that it took an hour and a half longer to convert the remaining one-fourth. In this respect the peptonizing process followed the rule observed in many other ferment actions, namely, that the gradually-accumulating product of the ferment action hampers the operation." He found, too, in peptonizing milk for invalids, that it is absolutely essential immediately to boil the milk when the process has reached the desired point, in order to stop ulterior changes. Making allowances for the varied activity of the pancreatic extracts, which are not always quite alike, he found the following method give good results. "A pint of milk is first diluted with half its bulk of water and heated to about 150° F. It is then put into a covered jug, with a tablespoonful of liquor pancreaticus and twenty grains of bicarbonate of soda (in solution). The jug is then placed in a warm place under a 'cosey' for one hour. At the end of this time the milk is at once raised to the boiling-point. It can then be used like any other milk, and undergoes no further change until decomposition sets in. It is well, however, to know that peptonized milk does not keep well, and that it should be used within twelve hours of the time of preparation. The use of the thermometer may be obviated by directing the milk to be diluted with an equal bulk of *boiling* water." As to the process which goes on in milk so treated, it is found that in about ten minutes the milk thickens and begins to curdle in a soft curd; this phase soon passes away and the soft curds dissolve, and in about half an hour from the commencement the milk has recovered its original appearance. If the process is allowed to proceed, it is found that the milk assumes a grayish shade and its flavor is deteriorated, it becoming bitter and unpleasant to the taste. Consequently it is necessary to raise the temperature of the milk to the boiling-point, and so arrest the process when the proper time arrives.

"Another formula, which supplies a more nutritious product and does not require the thermometer, is the following. To half a pint

of cold milk, in a covered jug, add half a pint of well-boiled and *boiling* gruel. This gives a temperature of 120° to 130° F. To this add a dessertspoonful of the liquor pancreaticus and a dessertspoonful of a saturated solution of bicarbonate of soda (which contains about ten grains). Put under a 'cosey' as before, and heat to boiling at the expiration of an hour. In this case the trypsin of the pancreatic extract acts on the casein of the milk, and, I presume, on the gluten contained in the gruel. The diastase of the extract also acts on the starch of the gruel and converts it into sugar. The making of it is exceedingly easy, and it would seem well adapted both for the nursery and the sick-room. The gruel employed should be made thin; it may be prepared from wheat-flour, or from oatmeal, or from any other farina." When a pancreatic extract of constant strength and precise action is procured, it will be easy to time the exact moment when the mixture should be raised to the boiling-point; meanwhile, an hour is about the time to stop the process. If the process be properly performed, the resultant products are as palatable as if they were simple milk-and-water or simple milk-gruel. "But if the process be carried too far, or if, on the other hand, the milk be still partially curdled when put before the patient, the product is not liked, and is even apt to cause nausea."

These experiments and experiences of Dr. Roberts's seem to me to possess a very high practical value, and, indeed, to open up a new vista in the treatment of our worst cases of dyspepsia. How to pass that gulf, the acid stomach, he has shown us lucidly and clearly. Indeed, the combination he describes will probably be further acted on by what gastric juice there is with advantage. In cases—and these are very common—where the gastric juice is poured out in imperfect quantity, and which the late Dr. Leared said were characterized by pain in the stomach after food, this preparation of milk and gruel ought to remove most of our difficulties. Certainly, the prospects of dyspeptics are much brightened by this practical investigation into the digestive ferments and their uses. Not only that, but during fevers and acute inflammations in convalescence, in chronic gastritis, in gastric ulcer (especially), and in gastric cancer in its later stages, such alimentation holds out excellent prospects. So valuable, practical, suggestive a contribution to our therapeutic armamentarium I do not remember to have read for a considerable period of time; and I trust this abstract of it may be serviceable to the readers of the *Times*.

J. MILNER FOTHERGILL.

THE students of the Medical Department of Harvard number this year 251, distributed as follows: first class, 105; second class, 79; third class, 60; fourth class, 2. Graduates' course, 5.

PROCEEDINGS OF SOCIETIES.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

A CONVERSATIONAL meeting was held at the hall of the College of Physicians, Philadelphia, November 12, 1879, Prof. Henry H. Smith, President of the Society, in the chair.

Dr. J. A. McFerran read a paper entitled "Tactus Eruditus" (withdrawn by the author).

Dr. E. T. Bruen reported some unusual cases of anasarca. (See page 137.)

Dr. Frederick P. Henry inquired what process had been adopted for counting the blood-corpuscles in attempting to decide the question of anæmia. He understood the lecturer to state that, in the only case in which a count of the corpuscles was made, their number was found to be 4,750,000 per cubic millimetre. Whether this is evidence of the existence of anæmia or not would depend, to a great extent, upon the kind of instrument employed. With Malassez's instrument such a count would be above the normal average, while with Gower's or Nacet's it would be somewhat below it. It is impossible to decide in some cases, from the general appearance of the patient, whether he be anæmic or not. He recalled a case that he had recently examined with Dr. Nancrede, in which an examination of the blood showed that there were only about 3,000,000 red cells per cubic millimetre, while there was an enormous increase in the white cells, their proportion to the red being as two to three. From an ordinary observation no one would have supposed the patient to be anæmic, his face being full, and his cheeks and lips quite red.

He wished also to call attention to the fact that, in the cases just reported, there was a history of intermittent fever, and that the most acute anæmias, with the exception of that form produced by loss of blood, are caused by fevers. The rapid destruction of red blood-cells in febrile conditions is indicated by an increase in the amount of urine pigment which, in common with all the coloring-matters of the body, is derived from the red cells. According to Wagner, there is a twenty-fold increase in the amount of urine pigment in fever; which statement, although vague (fever being a relative term), is sufficient to prove that the increase in all fevers is very great. Dr. Henry also called attention to the fact that iron had entered into the treatment of all these cases, and, taking this fact in connection with their previous history, he was hardly convinced of the non-existence in them of anæmia.

Dr. Henry, in reply to a question, stated that he would explain the presence of red lips in an anæmic patient by the supposition of an uneven distribution of the blood, as it is well

known that a poor quality of the blood often coexists with frequent flushing of the face.

Dr. Bruen said that he held in his hand a copy of Nacet's directions for the use of his instrument, in which the average number of red globules is set down at 5,000,000 per cubic millimetre. He would defer to the greater experience of Drs. Henry and Nancrede, but a series of five observations upon healthy individuals showed that in three of them the number of cells was below five millions, even to the extent of two or three hundred.

While the cases reported may have had a slight reduction in the number of the red cellular elements of the blood, there was not sufficient anæmia to account for the dropsy; and he desired to call the attention of the Society to the explanation to which his own mind had been directed by a study of the subject and a few similar reported cases, viz., a diminished vaso-motor tonus in cases where the blood-crisis was not sufficiently at fault to account for the transudation. He believed that this pathology of dropsy had been neglected.

He had used the iron in these cases rather for its effect upon the blood-vessels than for its power of restoring to the red blood-disks the material necessary for their functional activity as oxidizing and, therefore, eliminating agents.

He did not think that the iron in his cases had been a very active agent in the absorption, though in its place an excellent remedy.

Dr. Charles B. Nancrede recalled the fact that the blood-cells in the case referred to by Dr. Henry were only a little over two millions, while the man's appearance was decidedly that of health. The testimony of observers who have used Nacet's instrument is that the average in health is above five millions. This is the opinion of Dr. Keyes also. In referring to the cases whose blood was examined by Dr. Bruen, he said that if they were resident physicians he would not consider that they could be properly taken as instances of healthy individuals. The confinement and the hospital air tend to reduce their physical condition below the standard.

NEW DIETETIC PREPARATIONS.

Dr. M. O'Hara called the attention of the members of the Society to some specimens of dietetic preparations for the sick that he had found very useful. They are made by the Health Food Company, and consist of mixed cereals, containing a large proportion of gluten, as well as the amylaceous constituents. In one specimen for diabetic diet the starch had been removed. The cereal coffee he had found very useful in dyspepsia. The other preparations make very nourishing dishes for the sick.

In young children he prefers Horlick's Sugar of Malt where there is defective nutrition.

Dr. Carl Seiler said that in the northern part

of Germany a preparation similar to this cereal coffee is made, and is generally used as a substitute for coffee. In regard to the Sugar of Malt, he reported that he had used it in a number of cases with good results in the convalescence from typhoid, in phthisis, and in other wasting diseases. He prefers it to cod-liver oil. He did not regard it simply as a food, for he had found that, in overdoses, it produced nervous symptoms—such as dizziness and tinnitus—similar to quinine.

Dr. William B. Atkinson recommended Keasby & Mattison's Infant's Food: as a restorative he had used it with excellent results. He would prefer Mellin's food to Horlick's, but considered them almost identical in composition and manufacture.

Dr. Albert H. Smith reported that he had obtained very good results from the use of Horlick's Sugar of Malt, and his Infant's Food, especially with strumous and rickety children. He preferred the malt in this granulated condition, because the children take it more readily.

REVIEWS AND BOOK NOTICES.

YELLOW FEVER A NAUTICAL DISEASE: ITS ORIGIN AND PREVENTION. By JOHN GAMGEE.

We have fancied that the title of this book savors something of the yarn of the "Nancy Bell." The

"And I'll eat my hand if I understand"

ran continually through our minds as we read the part devoted to the etiology of the disease. The author maintains that the source of the yellow-fever poison is to be found exclusively in ships. Yet thousands of emigrants sail safely to Cuba from Spain dreading the day of the landing. Yet there are ships that run safely the gauntlet of an anchorage in Cuban waters, when they prevent the ship-hands from landing. It would be a curious thing, a quarantine in Havana with the object of preventing the importation of the disease.

The number of cases in which yellow fever has developed out at sea, in *vessels absolutely free of all contamination from the sea-borders of the Gulf of Mexico*, is so very small that we should conclude that the ships presented the conditions favorable for the development of the poison, such as are habitually met with on the tropical sea-borders of America, rather than to say that the disease always originates on board ship. One circumstance of the greatest importance is frequently overlooked. A ship is said to be not contaminated because it starts from or arrives in a port where there are no cases of yellow fever. The question should be to find out whether there are any persons susceptible to the disease in that port. Evidently this book is "a sketch fashioned

and almost written at one sitting," to quote the author!

Fortunately, the opinions of the author have led him to deal especially with the important question of ship-disinfection. How he has discharged this part of his work it is needless for us to say. His labors towards rendering practicable the application of cold to the sanitation of vessels have been appreciated and commended by authorities far more capable of judgment than we are. J. G.

REPORTS TO THE ST. LOUIS MEDICAL SOCIETY ON YELLOW FEVER. By W. HUTSON FORD, A.M., M.D. St. Louis, 1879.

The first part contains a report to the St. Louis Medical Society, by Drs. Ford and F. J. Lutz, a committee appointed by that body. It is divided into five sections:

Section I.—"A detail of cases developed in St. Louis, in persons coming to this city from Southern cities where yellow fever was prevailing." Of course, the scope of the work does not allow of a detailed account of each case; nevertheless, in the majority of them we find a good record of the symptoms of yellow fever. Three of the thirty-five cases are supposed to have had their origin in contagion.

Section II.—"Cases of yellow fever treated at the Quarantine Hospital." Here we find a description of the sanitary conditions of St. Louis previous to the epidemic.

Section III.—"Cases of yellow fever arising in St. Louis, its suburbs, at quarantine, and on board the transport steamer, by contagion from cases developed in persons from points at the South where yellow fever was epidemic." It is, indeed, no easy matter to overcome the arguments presented by some of these cases in favor of the doctrine of contagion.

Section IV.—"Cases, either of yellow fever or closely simulating that disease, arising in St. Louis and its suburbs, without known contact with other cases, or where no such contact existed." These cases originated in places which were in decidedly unhygienic conditions. At Carondelet (suburb of St. Louis) the committee are of opinion that the disease originated spontaneously on account of predisposing hygienic and meteorological conditions. We cannot but object here that Carondelet, equally with other parts of St. Louis, must have been under the same circumstances often before, and, further, note the fact that they were never so thoroughly exposed to infection as in the year 1878.

The St. Louis Medical Society adopted this report by a unanimous vote.

The second part of this valuable work contains a report of Dr. W. Hutson Ford on—

I. "Meteorological conditions and etiology of sunstroke." This is a very carefully prepared account of the relations of sunstroke to the meteorological phenomena in St. Louis

during the period extending from 1874 to 1878.

II. The same relations with respect to sporadic cholera.

III. Malarial fevers.

IV. "Etiology of yellow fever." The views of the author may be epitomized thus: that the cause of the disease arises in animal decomposition, more especially excrementitious; that it is not a specific disease, but simply a malignant form of *typhus gravior* (whatever this may be the author says not); and, finally, that it is contagious.

Without finding good grounds for these opinions, we recommend, however, this report to the reader. It contains an elaborate account of the late epidemics and the meteorology of eleven cities of the Union during the years from 1874 to 1878, both included.

Finally, *Part V.* is devoted to a "consideration of the theory and practice of the administration of veratrum viride in yellow fever." J. G.

THE WINTER AND ITS DANGERS. By HAMILTON OSGOOD, M.D. THE MOUTH AND THE TEETH. By J. W. WHITE, M.D., D.D.S. Health Primer Series. Lindsay & Blakiston, 1879.

Under the fostering care of the editor, Dr. Wm. Keen, the Health Primer Series grows apace, and with its growth seems to improve in quality as well as quantity. To our thinking the present volumes leave little to be desired either in matter or in manner. Dr. Osgood does, it is true, appear possessed by an anti-shower-bath demon, but the goodness of his work in general atones most fully for this violent vagary, which indeed adds piquancy to various pages, and, like the lies of Satan, has something of truth underneath it. With the opinions expressed by Dr. White in regard to difficult dentition and the reflex relations of the teeth, we have much sympathy, indeed, full accord. The ignorance or indifference, or the combination of these factors of mischief, concerning dentition and its ills, which prevails among the medical profession, makes the little brochure of Dr. White especially timely. The description of the proper care of the teeth is lucid and evidently based upon sound principles; it will also have the charm of novelty to most doctors. To the profession of medicine Dr. White's book will be as valuable as to the laity, and we most earnestly commend the volume to our fellow-students. The lesson learned from it in an evening can be applied during a lifetime, and an original outlay of fifty cents, if a man lives fifty years, is at the rate of one cent a year with interest. Seriously speaking, we have learned so much from this book with such economy of time as has not often been our lot; and we predict for the volume, in point of circulation, the first place in the series.

GLEANINGS FROM EXCHANGES.

THE LOCAL ANTAGONISM OF ATROPINE AND PILOCARPINE.—Some interesting experiments on the local antagonism of atropine and pilocarpine were recently communicated to the Académie des Sciences by M. Strauss. If one or two centigrammes of nitrate of pilocarpine are injected beneath the skin of a man, at the end of from two to five minutes the skin covering the injected liquid reddens, and then is covered with very fine droplets of sweat, which appear first not at the point of the injection, but at the circumference of the area, and extend concentrically to the centre, finally covering the whole area. This local sweat occurs two or three minutes before the salivation and five or eight minutes before the general perspiration, and it is the more pronounced the greater is the number of sudiparous glands at the spot; the best places being the forehead or front of the sternum; the back of the arm, where injections are most frequently made, being the least favorable, and for this reason, probably, the phenomenon has escaped observation. Reducing the dose, the effect of the injection becomes ultimately strictly local, without the slightest general sweating. Thus, at will, this or that part of the skin may be made to sweat, or lines of sweat may be produced on an otherwise dry skin. The dose with which the effect is purely local is from one to four milligrammes.

By means of subcutaneous injections of atropine the opposite effect may be obtained. If, when a person is in full sweat from the effect of pilocarpine, very minute doses of sulphate of atropine are injected under the skin, the perspiration lessens at the spot almost immediately, and in a few minutes it is totally suppressed. Thus dry areas and lines may be at will produced upon the moist skin. In order to ascertain that the arrest of the perspiration is really the result of the atropine, and not of the mere injection of liquid, an equivalent volume of pure water was injected at certain spots, but without causing any arrest of the perspiration. The dose of atropine which will arrest the sweating is extremely small. One-millionth of a gramme of atropine never failed to produce it in man, and in the cat one-hundred-thousandth of a gramme was sufficient. The sweating skin is thus a test of atropine of extreme delicacy. The sensibility of the sudiparous glands to atropine is greater even than the iris, since the millionth of a gramme of atropine produces no appreciable dilatation of the pupil.

If the skin is frozen with ether-spray, and one or two centigrammes of pilocarpine are injected, the local sweating does not ensue, in spite of the occurrence of general perspiration. Even after the freezing has passed off, the local sweating does not occur, or is

brief and slight. Extreme cold appears thus to act as atropine, paralyzing the sweat-nerves, a paralysis which persists even after the local cold and anæmia have passed away. This fact is of great interest in connection with the well-known pathological effect of the arrest of sweat by cold.

The experiments of Luchsinger, confirmed by Vulpian, have shown that in the cat an injection of one or two milligrammes of atropine arrests the sweating caused by a centigramme of pilocarpine, but that if another centigramme of pilocarpine is injected under the skin of one of the paws, the sweat will reappear upon this paw, and nowhere else. In man Strauss has ascertained the same fact. After two centigrammes of atropine had been injected, two milligrammes of pilocarpine were injected half an hour later on another region of the skin. Neither salivation nor general sweating occurred, but merely a local perspiration, very persistent, however, at the point of injection. An attempt was made to ascertain what quantity of atropine rendered large doses of pilocarpine locally inefficacious. In the leg of a strong man six milligrammes of sulphate of atropine were gradually injected, and then, in a single injection, four centigrammes of pilocarpine, without causing even local sweating. In a young cat the same result was obtained after injecting under the skin of the belly three milligrammes of atropine gradually. The subsequent injection into a hind paw of one and a half centigrammes of pilocarpine, and the galvanization of the sciatic after the method of Luchsinger, caused no perspiration upon this paw. —*Lancet*, vol. ii., 1879, p. 474.

TROPHIC NERVES.—The subject of trophic nerves and trophic nerve-centres appears to be as perplexing as ever, and nothing could well be more remarkable in its way than the diversity of results obtained by investigators in this region of physiology. It may be remembered that a few months ago we recorded (May 10, page 510) an interesting discussion that has recently been going on in Germany upon the effects of section of the pneumogastric nerves on the nutrition of the heart and lungs. The outcome of that discussion appeared to be in favor of Professor Eichhorst's view that the vagi contain trophic nerves to the heart, if not to the lungs, as has been so frequently contended. Meanwhile, this question of trophic nerves has been reopened in the classical region of the fifth cranial nerve, and we are reminded of the many discussions upon "traumatic" vs. "trophic" keratitis by similar investigations upon inflammation of the tympanum. It is now nearly two years since Gellé, of Paris, announced that injury to the nucleus of the trigeminus in the medulla oblongata of the dog leads to suppuration within the middle ear of the corresponding side, as well as to affection of the eye and nose. This experi-

ment has recently been repeated by Professor Hagen, with the modification that the trunk of the fifth nerve of one side was cut within the skull by a carefully planned incision, made without opening the head (*Archiv f. Exper. Path. und Pharm.*, xi., 1 and 2, page 39). Thirteen animals were operated on, and Professor Hagen's conclusion is that the inflammation which undoubtedly occurs in a small number of cases within the tympanum supports the view that keratitis, after section of the fifth nerve, is "traumatic," and not "trophic." Still, it is an interesting fact that in three at least out of his thirteen cases the observer found inflammatory signs within the cavity of the middle ear; and we may expect that other physiologists will be disposed to attach more importance to these results than Professor Hagen would appear to have done, and will probably repeat the investigation.—*Medical Times and Gazette*, vol. ii., 1879, p. 451.

MISCELLANY.

THE STORY OF A NEW REMEDY.—Under this title the *Medical Times and Gazette* of November 22 gives an account of the recent *furore* over benzoate of sodium in Germany. It appears to have been a marked case of *Schwärmerei*. A Dr. Krocak, assistant to Professor P. Rokitsky, published three cases of advanced phthisis, in which patients with large cavities, high fever, and in a state bordering on the moribund, were discharged in a month or two as "cured," with great gain of weight, and disappearance of the physical signs of cavities. The solution of benzoate used was one of five per cent. strength, but no details as to the mode of administering the inhalation, or as to the daily period of using it, were supplied. A few days later, private inquiries, and, later still, a letter from Dr. Krocak himself to an eager patient, elicited the information that the solution was to be inhaled as spray pulverized by a Seigle's apparatus, for an hour morning and evening. At the same time the patient was to have plenty of fresh air, good meat (one effect of the benzoate being to increase greatly the appetite), and freedom from all depressing influences. The news of the wonderful discovery at Innsbruck spread far and wide in Vienna, and the demand for benzoate of sodium and Seigle's pulverizers soon exceeded the supply. The drug has now been largely tried not only in the General and other Vienna hospitals, but also by family doctors among the sadly numerous class of consumptives in that city; and the *Wiener Medizinische Wochenschrift* affirms, as the outcome of all this ado, that all these experiments "have failed to yield the slightest favorable result, or a trace of even the most trifling diminution of dangerous symptoms."

Great excitement has prevailed in Vienna over this *ad captandum* introduction of a new remedy, and the *Wiener Medizinische Presse* has gone so far as to suggest that Professor Rokitsky should "step down and out." Nevertheless, in spite of this outcry, there is reason for believing that inhalations of benzoate of sodium may arrest septic processes (and there is no doubt that the later stages of phthisis are accompanied with, or dependent on, septic processes) in the lungs. Dr. Schüller, of Greifswald, has found, by experiments upon rabbits, that such inhalations have a markedly beneficial effect on these animals when suffering under the influence of artificially induced tuberculosis. There is reason to believe that benzoate of sodium has markedly anti-bacterial properties, and it is unfortunate that its introduction should occur amid the raging of contending parties.

UNANIMO CONSENSU.—Three medical professors in Lisbon, Bento de Sause, Martins, and Cabral, have published an account of a celebrated case of an exhumed corpse, to decide whether the deceased had hung himself or had been strangled. The three experts mentioned declared for the latter alternative, but found ardent opponents in three members of the faculty of Coimbra, according to whose declaration the jury acquitted the defendant.

The professors at Lisbon applied in a joint letter to experts in medical jurisprudence in all countries of Europe, gave them the matter at issue, and asked them to give their opinion. The physicians asked were Hoffmann, of Vienna; Aloys Martin, of Munich; Guillery, of Brussels; Gaedeken, of Copenhagen; Bergeron and Tardieu, of Paris; Pallis, Georganlas, and Arphanides, of Athens; y Vivo, of Barcelona; y Mendoza, of Cadiz; Yanes, of Madrid; de Myer, of Utrecht; Bristowe, Crosby, and Taylor, of London; Romati, of Bologna; Lazzaretti, of Padua; Pacchiotti, of Turin; Herberg, of Christiania; Mando and Pinto, of Coimbra; Vianna and Pitta, of Lisbon; Osonio, of Ponto; Liman, of Berlin; Tchitowitsh and Lenz, of St. Petersburg; Jaederholm, of Stockholm; Gurmert, of Bern. The answers from all these experts agreed that the party concerned "must be considered to have been strangled." Such a unanimity is both interesting and of importance, proving the high development of the science of forensic medicine.—*Hospitals-Tidenden: Buffalo Med. and Surg. Journ.*

OIL OF EUCALYPTUS IN BRONCHITIS.—Having employed this oil in eight or nine cases of bronchitis with most excellent results, I would recommend a fair trial of it. In chronic bronchitis, in asthma, and in the advanced stages of ordinary severe colds, its influence has seemed to be very pronounced for good. It differs from most balsamic remedies in acting also as a narcotic and allaying cough. Twenty drops of it should be given

in emulsion four times a day. In asthma it has in one case relieved the paroxysms after failure of ordinary remedies.—H. C. W.

In an editorial upon the discovery of the "Difference between Typhous and Typhoid Fever," the *Medical Press and Circular* gives full credit to the late Dr. Gerhard, of this city. After stating that Dr. Stewart's Memoir was published both in Paris and London in 1840, it says, "Gerhard and Pennock, of Philadelphia, had, simultaneously with Stewart, arrived at similar views, and their observations were published in the *American Journal of the Medical Sciences* in 1837. Thus, in time of publication, they were actually before Stewart, whose work was quite independent, who had begun it in 1835, when the distinction was made known in the Glasgow Fever Hospital."

A SENSIBLE MEMORIAL.—Surgeon-Major Shepherd, of the British army, was killed at Isandula while trying to save a wounded comrade's life, and the funds raised to do honor to his memory have been given to Aberdeen University (Dr. Shepherd having been born in that shire) for the foundation of an annual gold medal for surgery.

PROFESSOR ERASMUS WILSON seems well endowed with the ability and desire to donate munificently. He has offered the sum of one hundred thousand dollars, or as much as may be required, to the Court of Directors of the Margate Sea-Bathing Infirmary for Scrofula, for the erection of a new wing containing wards for nearly seventy patients, a tepid sea-water swimming-bath, and a chapel containing seats for three hundred people.

BALSAM OF PERU IN PRURITUS.—Dr. Auerbach, of Berlin, has for some time past treated pruritus by balsam of Peru with the greatest success. After the first rubbing into the part affected, great relief is obtained, and in a few days a cure results.—*Medical Times and Gazette*, Nov. 8, 1879.

NOTES AND QUERIES.

NEW YORK STATE LUNATIC ASYLUM,
UTICA, N. Y., November 18, 1879.

H. C. WOOD, M. D.,

Editor *Philadelphia Medical Times*:

DEAR DOCTOR,—The enclosed correction of a false statement and unjust criticism contained in the *New York Medical Record* of October 11, 1879, was sent to that journal for publication on October 13. After four numbers of the *Record* had been published containing no notice of the communication, a letter was sent to the editor, with a stamp enclosed, asking if the communication had been received; but no attention was paid thereto, although a fifth number of the journal has since appeared.

In view of this unfairness and discourtesy, may I ask the insertion of this letter and the accompanying correction in your journal?

Very respectfully yours,
THEODORE DREEKE,
Special Pathologist.

UTICA, N. Y., October 13, 1879.

TO THE EDITOR OF THE MEDICAL RECORD:

The comment upon the Thirty-Sixth Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y., in the

issue of your journal, October 11, 1879, contains a statement which, if not corrected, can but mislead every reader who has not the opportunity of examining the report personally.

On page 352, in speaking of the pathological part of the report, you use the following language:

"Considerable space is given to a description of apparatus with which every microscopist is familiar. . . ." This is neither correct nor just. The instruments described in the report are throughout original, and devised by the undersigned for the special purposes indicated in the report. Their existence is known and appreciated only by members of the profession who have visited the pathological laboratory of the asylum during the last two years. Each part of the apparatus described in the report is novel, and no microscopist, either in this country or abroad, can possibly be familiar with their use except those who have seen them here in operation.

It is not improper to remark that any one who undertakes the office of scientific critic should at least be just, and, if he attempts such a review, should give what the author really says, instead of what he supposes the author ought to say.

Yours,

THEODORE DREEKE,
Special Pathologist, N. Y. State Lunatic Asylum.

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF
OFFICERS OF THE MEDICAL DEPARTMENT
U. S. ARMY FROM NOVEMBER 30 TO DECEMBER 13, 1879.

BROWN, H. E., CAPTAIN AND ASSISTANT-SURGEON.—When relieved by Assistant-Surgeon Middleton, to report to the Commanding Officer, Fort Duncan, Tex., as Post-Surgeon. S. O. 252, c. s., Department of Texas.

TAYLOR, M. K., CAPTAIN AND ASSISTANT-SURGEON.—Granted leave of absence for one month, with permission to go beyond limits of the Department and apply for an extension of one month. S. O. 251, Department of Texas, November 28, 1879.

CLEARY, P. J. A., CAPTAIN AND ASSISTANT-SURGEON.—To report in person to the Commanding General, Department of the East, for assignment to duty. S. O. 271, A. G. O., December 2, 1879.

MIDDLETON, P., CAPTAIN AND ASSISTANT-SURGEON.—Assigned to duty as Post-Surgeon at Post of San Antonio, Tex., and to relieve Assistant-Surgeon M. K. Taylor as Attending-Surgeon at Department Headquarters. S. O. 252, Department of Texas, November 29, 1879.

KIMBALL, J. P., CAPTAIN AND ASSISTANT-SURGEON.—When relieved from duty at White River, Col., to proceed to Fort Sanders, Wyo. T., and resume his duties as Post-Surgeon. S. O. 111, Department of the Platte, December 6, 1879.

DE WITT, C., CAPTAIN AND ASSISTANT-SURGEON.—To resume his duties as Post-Surgeon, Fort Sidney, Neb. S. O. 111, c. s., Department of the Platte.

CARVALLO, C., CAPTAIN AND ASSISTANT-SURGEON.—To accompany troops ordered from Rawlins to Fort Laramie, Wyo. T., and there take post. S. O. 109, Department of the Platte, November 29, 1879.

ELBREY, F. W., CAPTAIN AND ASSISTANT-SURGEON.—Assigned to duty at Fort Bayard, N. Mex. S. O. 238, Department of the Missouri, November 28, 1879.

HOFF, J. V. R., CAPTAIN AND ASSISTANT-SURGEON.—Granted leave of absence for one month, with permission to apply for an extension of two months. S. O. 270, A. G. O., December 1, 1879.

COMEGYS, E. T., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—When relieved by Assistant-Surgeon Brown, to report as Post Surgeon to the Commanding Officer, Post of San Diego, Texas. S. O. 252, c. s., Department of Texas.

APPEL, D. M., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Granted leave of absence for one month, with permission to apply for one month's extension. S. O. 241, Department of the Missouri, December 2, 1879.

SMITH, R. E., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—His resignation accepted by the President, to take effect April 1, 1880. S. O. 271, c. s., A. G. O.